A RANGE EXTENSION FOR *EUREMA ALITHA* (C. & R. FELDER) (LEPIDOPTERA: PIERIDAE) IN AUSTRALIA, WITH NOTES ON THE MIGRATORY BEHAVIOUR OF *EUREMA* SPECIES IN SOUTH-EAST QUEENSLAND

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Abstract

Two specimens of *Eurema alitha* (C. & R. Felder) collected at Buderim, Queensland, provide a new southern distribution record for this species. One of these specimens was collected among other migrating *Eurema* Hübner species, although it remains unclear whether *E. alitha* is a migrant. Observations on the migratory behaviour of other *Eurema* species in south-east Queensland are also presented.

Introduction

The presence of *Eurema alitha* (C. & R. Felder, 1862) in Australia was first recognised by Braby (1997), who determined that this species had been collected in Australia since the early 1900s but had been confused with *Eurema hecabe hecabe* (Linnaeus, 1758) due to their similar wing patterns. *Eurema alitha* has a tropical distribution in Australia (Braby 1997, 2000, Jones 1999), with specimens collected as far south as River Heads, north-east of Maryborough, Queensland (Dunn 2007).

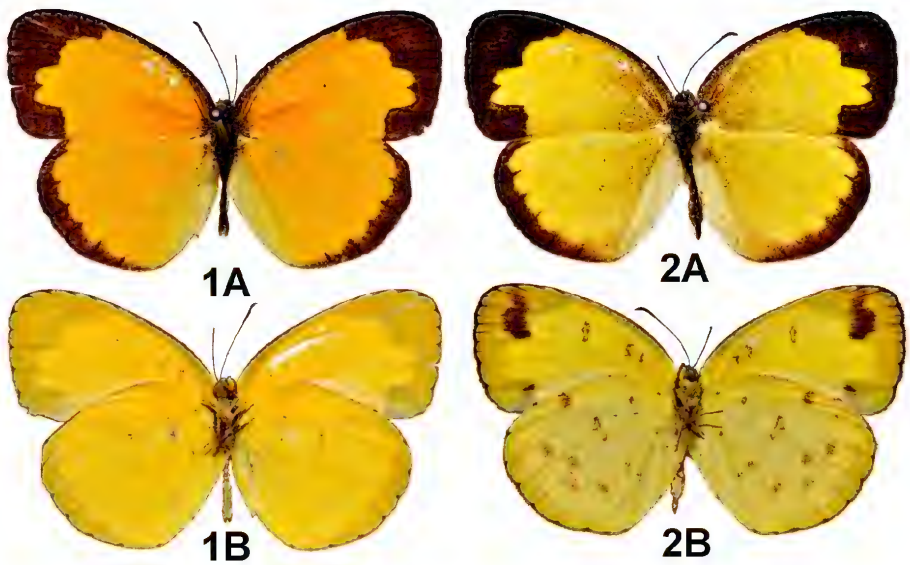
A new southern distribution record for *Eurema alitha*

Two specimens of *Eurema alitha* were collected at the same location at Buderim (26°39'59.88"S 153°3'37.66"E), Queensland in 1997 and 1999. The 1997 specimen was a male (Fig. 1) collected in early December, the second (Fig. 2) a female collected on 27 March 1999 from a migratory group comprised of several *Eurema* Hübner species. These specimens represent a range extension of approximately 135 kilometres south of the previous record by Dunn (2007).

Notes on the migratory behaviour of *Eurema* in south-east Queensland

Although a number of *Eurema* species have been recorded as migratory in Australia, few observations of their behaviour have been published (Braby 2000). I was able to observe a migratory flight in 1999, from which the female *E. alitha* was taken, in some detail at a number of locations across the Sunshine Coast district. On 25 March 1999, I observed butterflies at a site in Nambour (26°38'42.06"S 152°57'31.34"E) throughout the day. At about 1430h, I noticed that the number of *Eurema* present had increased abruptly and that their flight behaviour had changed. Normally, *Eurema* species have a strongly jinking flight that changes direction every few seconds, making their overall flight path hard to predict. In contrast, these butterflies had a more direct flight with less jinking and individual specimens arrived from the north and moved towards the SSW in a more-or-less straight line. Numerous *Eurema* specimens, showing identical behaviour, were subsequently observed

at Dulong, Montville and Mapleton on 26 March 1999, Buderim on 27 March 1999 and Beerwah on 8 April 1999. Opportunistic sampling of the migration at Buderim on 27 March showed it to be comprised of *E. alitha, E. brigitta australis* (Wallace, 1867), *E. hecabe hecabe* and *E. smilax smilax* (Donovan, 1805). The latter three species have been regularly encountered on the Sunshine Coast previously (pers. obs. and A.G. Orr pers. comm.). *Eurema* species showing migratory behaviour were not observed after 8 April 1999.



Figs 1-2. Specimens of *Eurema alitha* collected at Buderim, southeastern Queensland: (1A) ♂ upperside; (1B) ♂ underside (Buderim Qld, December 1997, coll. J.E. Nielsen); (2A) ♀ upperside; 2(B) ♀ underside (Buderim, Qld, 27 March 1999, coll. J.E. Nielsen).

Discussion

In addition to representing a 135 kilometre range extension, the female of *E. alitha* figured above represents the first record of this species associated with a migration. Various *Eurema* species have been observed to migrate in Asia, Africa and the Americas, with migrations often comprised of mixed species (Yata 1989). However, no literature was found recording migrations of *E. alitha* in Australia or elsewhere, while observations of this species in northern Australia suggest it is relatively sedentary (M.F. Braby pers. comm.). Braby (2000) and Jones (1999) summarised available information on *Eurema* migrations in Australia and regarded all Australian *Eurema* species except *E. alitha, E. herla* (Macleay, 1826) and *E. puella* (Boisduval, 1832) as opportunistic migrants.

As only one specimen of *E. alitha* was taken during the 1999 *Eurema* migration, it is unclear whether it was migrating, undertaking a coincidental non-migratory movement in search of hosts, or merely a vagrant. It is feasible that *E. alitha* may exploit host plants outside its normal distribution during favourable conditions. It is worth noting that the presence of the female *E. alitha* specimen (and *Eurema* migration) followed above-average rainfall on the Sunshine Coast (Bureau of Meteorology 2014). This rainfall may have promoted growth of *Eurema* host plants, providing favourable conditions for immigrant butterflies. The only known Australian host of *E. alitha, Glycine tabacina* (Fabaceae) (Braby 2000), is widely distributed in Queensland, including the Sunshine Coast, New South Wales, Victoria and Western Australia (PlantNet 2014). As it is difficult to distinguish *Eurema* species in flight due to their similar wing patterns, comprehensive sampling is needed to provide more information on the migratory behaviour of *Eurema* in Australia, including *E. alitha*.

Given the specimen records available, it is likely *E. alitha* is either uncommon or not normally present in southeastern Queensland. Despite extensive collecting on the Sunshine Coast between 1992 and 2005, I did not observe specimens of *E. alitha* other than those discussed here. Dunn (2007) concluded that *E. alitha* is best considered a vagrant in southeastern Queensland, based on targeted collecting. However, the possibility remains that the similarity between *E. alitha* and *E. hecabe hecabe* continues to cause the presence of *E. alitha* in this region to be overlooked. Further records are needed to determine the resident status of *E. alitha* in this area.

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